

**REMARKS**

Claims 1-5 and 8-15 are pending after entry of this paper. Claims 1-5 and 8-13 have been rejected. Claims 6-7 remain cancelled without prejudice. No amendments to the claims are made.

Reconsideration and withdrawal of the pending rejections in view of the above claim amendments and below remarks are respectfully requested.

**Response to Rejections under 35 U.S.C. §102**

The Examiner has rejected claims 1, 5, 8-9, and 14-15 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Reissue Patent No. Re. 36,118 to Cupertino et al. (hereinafter “US’118”). Applicant specifically addresses the rejection to independent claim 1, in regard to which the Examiner specifically contends that:

US’118 teaches a method for separating a metal selected from the group of magnesium, copper, titanium, iron, zinc from an organic complex thereof (Col.1, lines 8-10 of US’118). US’118 teaches applying a chelating ring resin to extract the metal from the aqueous solution in the form of a complex of the metal and the extractant (Col.1, lines 11-19 and examples 3-6 of US’118), which reads on the method of removal [*sic*] impurities by contact [*sic*] an aqueous [solution] with a chelating ion-exchange resin and removing metal impurities from said chelating ion-exchange resin. US’118 teaches applying strong chloride solution on the Cu-included aqueous solution (Col.5, lines 5-11, and Example 4 of US’118). Though US’118 does not specify the copper in [*sic*] monovalent, because the copper solution reacts with [the] strong chloride solution, the monovalent copper as recited in the instant claim would have been inherently present in the aqueous solution of US’118. MPEP 2112 III&IV. (June 25, 2008 Office Action, page 3)

Anticipation under 35 U.S.C. §102(b) requires each and every element of the claim to be disclosed, either expressly or inherently, in a single reference. Applicant respectfully disagrees that each and every element of claim 1 is disclosed in US'118, for the reasons set forth below.

Applicant agrees with the Examiner that US'118 is directed to a method for separating a metal from an organic complex thereof. US'118 describes in general terms the extraction of metals from aqueous solutions as follows:

The use of organic extractants in the hydrometallurgical recovery of metals from metal ores has been practiced commercially for a number of years. In general, the technique involves contacting an aqueous solution of metal salt, obtained for example by treating the crushed ore with acid, with an organic extractant which may be dissolved in a water-immiscible organic solvent or deposited on a porous material or in the form of a chelating resin, to extract the metal from the aqueous solution in the form of a complex of the metal and the extractant (col. 1, lines 10-19).

The Examiner cites the above excerpt along with Examples 3-6 of US'118 in support of the contention that "US'118 teaches applying a chelating ring resin to extract the metal from the aqueous solution in the form of a complex of the metal and the extractant." The Examiner contends that this reads on "removing metal impurities from said chelating ion-exchange resin." Applicant assumes that this is a typographical error, and that the Examiner intended to recite "removing metal impurities from said *solution using said* chelating ion-exchange resin," as recited in claim 1. Applicant respectfully disagrees.

Claim 1 specifically recites the step of "removing the metal impurities from said solution using said chelating ion-exchange solution," where "said solution" is based on the antecedent phrase "an aqueous strong chloride solution of monovalent copper." Applicant

respectfully asserts that US'118 read as a whole does not disclose, either expressly or inherently, *removing metal impurities from an aqueous strong chloride solution of monovalent copper using a chelating ion-exchange resin* as required by claim 1. The above excerpt is clearly deficient, as it does not recite an “aqueous strong chloride solution of monovalent copper.” Furthermore, as discussed in detail below, Examples 3-6 likewise do not disclose this step.

Example 3 of US'118 describes loading an organic solution (containing extractant) with metals (antimony and bismuth) by transferring the metals from an aqueous solution (col. 6, lines 40-47), and then subsequently stripping the metal-loaded organic solution with aqueous stripping solutions in a process to which US'118 is directed (col. 6, lines 48 – col. 7, lines 3). The aqueous solution from which the metals are transferred/removed in Example 3 is not “an aqueous strong chloride solution of monovalent copper” as required by claim 1. The relevant aqueous solution in Example 3 contains no chloride and no copper whatsoever.

[The organic solution] was loaded with antimony and bismuth by contacting one part of [organic] solution with five parts by volume of an aqueous solution containing 193 ppm of antimony, 176 ppm of bismuth and 170 g/l sulphuric acid twice, at 60° C. for one hour (col. 6, lines 41-45).

Example 4 of US'118 describes loading an organic solution (containing extractant) with metals by transferring the metals from an aqueous solution (col. 7, lines 7-16), and then subsequently stripping those metal-loaded organic solutions with aqueous stripping solutions in a process to which US'118 is directed (col. 7, lines 17-42). The specific metals set forth in Example 4 are  $\text{Fe}^{3+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Ni}^{2+}$ , and  $\text{Cu}^{2+}$ . Again, as with Example 3, the aqueous solutions from which the metals are transferred/removed are not “aqueous strong chloride solution[s] of monovalent copper” as required by claim 1. The solutions contain no chloride whatsoever, and the copper solution contains divalent copper ( $\text{Cu}^{2+}$ ), not monovalent copper:

Aqueous solutions containing 1 g/l of  $\text{Fe}^{3+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Ni}^{2+}$ , or  $\text{Cu}^{2+}$  and having a pH value of 2.0 were made. The metals were taken as their sulphates. Metal-loaded organic solutions were prepared by rapidly stirring... [a solution of the organic extractant]...with an equal volume of one of the aqueous solutions mentioned above for one hour at 25° C (col. 7, lines 7-14).

Example 5 of US'118 describes loading a chelating resin with metals (antimony and bismuth) by transferring the metals from an aqueous solution (col. 7, lines 46-52), and then subsequently stripping those metal-loaded organic solutions with aqueous stripping solutions in a process to which US'118 is directed (col. 7, line 52 – col. 8, line 27). Again, the aqueous solution from which the metals are removed is not “an aqueous strong chloride solution of monovalent copper” as required by claim 1. The aqueous solution contains no chloride and no copper whatsoever.

30 g of a commercially available chelating resin, Duolite C467 (ex – Roman and Haas S.A.), was loaded with antimony and bismuth by contacting the resin with 51 [sic] of an aqueous solution containing 0.53 g/l of antimony as its sulphate  $\text{Sb}_2(\text{SO}_4)_3$ , 0.46 g/l of bismuth as its sulphate  $\text{Bi}_2(\text{SO}_4)_3$  and 170 g/l of sulphuric acid, with vigorous agitation at 20°-25° C. for 24 hours (col. 7, lines 46-52).

Example 6 uses the metal-loaded resins prepared as in Example 5.

None of the processes set forth in Examples 3-6 disclose removing any metal, let alone metal impurities, from an aqueous strong chloride solution of monovalent copper as required by claim 1.

The Examiner further contends that “US'118 teaches applying strong chloride solution on the Cu-included aqueous solution (Col.5, lines 5-11, and Example 4 of US'118).” US'118 states at column 5, lines 5-11:

The weakly acid aqueous solution of an alkali metal or alkaline earth metal chloride preferably has a chloride content of at least 5M and suitably has an acid strength of from 0.1M to 0.5M above the stoichiometric requirement for stripping the metal, hydrochloric acid being preferred. Preferred metal chlorides include the calcium and magnesium salts.

This above-cited portion of US'118 clearly describes the aqueous stripping solution, which is used to remove metals from organic complexes thereof. See col. 1, lines 54-57, where it is stated that "such metals can be recovered from their complexes in a facile manner by treating the complex with a *weakly acid strip solution* containing a high concentration of chloride ion" (emphasis added). US'118 does not disclose contacting the aqueous strip solution with anything but organic complexes of metal. There is no disclosure, either expressly or inherently, of contacting the aqueous strip solution with an aqueous solution of copper. Likewise, in Example 4, the Examiner appears to be referring to aqueous strip solution B as the strong chloride solution, which contains 2.75 molar  $\text{CaCl}_2$ . Strip solution B is contacted with a divalent copper-containing organic solution, not an aqueous solution of copper. Furthermore, although the resultant solution does contain calcium chloride and 547 ppm copper (col. 7, line 39), it is nevertheless the resultant solution, and is used no further in US'118.

In light of the foregoing, applicant respectfully submits that US'118 does not disclose, either expressly or inherently, the claim element of *removing metal impurities from an aqueous strong chloride solution of monovalent copper*. Accordingly, applicant believes the rejection of claim 1 under 35 U.S.C. §102(b) to be improper, and respectfully requests reconsideration and withdrawal of same.

As an additional matter, the Examiner admits that US'118 does not disclose monovalent copper, and contends that "because the copper solution reacts with [the] strong chloride solution, the monovalent copper as recited in the instant claim would have been inherently present in the aqueous solution of US'118." Whether or not the Examiner's baseless contention regarding the inherent production of monovalent copper in some aqueous solution described in US'118 is true, applicant nevertheless reiterates the US'118 does not disclose anywhere the removal of metal impurities from an aqueous strong chloride solution of copper, let alone monovalent copper. Accordingly, applicant again requests reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. §102(b).

#### Dependent Claims

Applicant has not independently addressed all of the rejections of the dependent claims. Applicant submits that for at least similar reasons as to why independent claim 1 from which all of the dependent claims 2-5 and 8-15 depend are believed allowable as discussed *supra*, the dependent claims are also allowable. Applicant, however, reserves the right to address any individual rejections of the dependent claims and present independent bases for allowance for the dependent claims should such be necessary or appropriate.

#### **CONCLUSION**

Based on the foregoing amendments and remarks, applicant respectfully requests entry of this amendment, reconsideration and withdrawal of the rejection of claims, and allowance of this application. Favorable action by the Examiner is earnestly solicited.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 4819-4721.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **13-4500**, Order No. 4819-4721 .

Respectfully submitted,  
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